Abstract of the Disclosure

A method of perceptual 3-dimensional (3D) shape description and a method and apparatus for searching a perceptual 3D graphics model database established using the description method are provided. The description method includes: generating nodes that respectively correspond to parts of a part-based representation of a 3D shape model, the nodes including unary attributes of the parts; generating edges that include relational attributes between the nodes; and generating an attributed relational graph of the 3D shape model that is comprised of the nodes and the edges. The search method includes: receiving a predetermined 3D graphics model; transforming the received 3D graphics model into a perceptual 3D shape descriptor; and comparing the perceptual 3D shape descriptor with each of the perceptual 3D graphics models stored in the database to retrieve the 3D graphic models that are similar to the perceptual 3D shape descriptor. The searching apparatus includes: a query input unit that receives a query that is a 3D graphics model; a model/shape descriptor transforming unit that transforms the 3D graphic model received as the query into a perceptual 3D shape descriptor; a matching unit that compares the perceptual 3D shape descriptor with each of the perceptual 3D graphics models stored in the database to retrieve the models that are similar to the perceptual 3D shape descriptor; and a model output unit that outputs the retrieved model. A query by sketch or a query by editing is available, and the models that are similar to a query can be more accurately retrieved due to a double earth mover's distance method used to match query and model graphs.